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FEDERAL COMMUNICATIONS COMMISSION
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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)

Revision of the Commission's Rules)

To Ensure Compatibility with)

Enhanced 911 Emergency Calling Systems)

CC Docket No. 94-102

RM-8143

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MOTOROLA, INC. REPLY TO COMMENTS ON
PETITIONS FOR RECONSIDERATION

Motorola, Inc. ("Motorola") herewith replies to the comments filed on the petitions for reconsideration of the *First Report and Order* in the above-captioned proceeding.¹ The *First Report and Order* adopted initial requirements ensuring compatibility between certain land mobile radio systems and enhanced 911 ("E911") systems coming into use by public safety answering points ("PSAPs"). Motorola fully supports the implementation of wireless capabilities that will assist public safety agencies in the discharge of their important life and property saving responsibilities. As discussed below, however, the petition for clarification and reconsideration of the Mobile and Personal Communications Division of the Telecommunications Industry Association ("TIA"), and the petitions of numerous other parties, demonstrate that certain of the requirements adopted in the *First Report and Order* are unclear, technically infeasible, or premature. Motorola accordingly urges the Commission to modify and clarify the *First Report and Order* on reconsideration.

¹Compatibility with Enhanced 911 Emergency Calling Systems, CC Docket No. 94-102 (July 26, 1996) ("*First Report and Order*").

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Introduction

The *First Report and Order* in this proceeding adopts a number of regulations intended to "foster major improvements in the quality and reliability of 911 services available to the customers of wireless telecommunications service providers."² Specifically, the new rules require, among other things, that covered wireless carriers be capable of:

- ▶ Processing all 911 wireless calls that transmit a "code identification," and processing all 911 calls that do not transmit a "code identification," if requested by the PSAP, within one year;
- ▶ Transmitting 911 calls from individuals with speech or hearing disabilities through means other than mobile radio handsets, within one year;
- ▶ Routing the originating telephone number for 911 calls, and the location of the base station receiving a 911 call, to the PSAP through the use of pseudo Automatic Number Identification ("pANI"), within 18 months; and,
- ▶ Providing PSAPs with the location of a 911 caller by longitude and latitude within a radius of 125 meters using root mean square techniques, within five years.

All of these requirements are contingent upon the carrier receiving a request for service from the designated PSAP and the adoption of funding mechanisms by the PSAP.

In TIA's petition for clarification and reconsideration filed on September 3, 1996, TIA urged the Commission to modify the rules adopted in the *First Report and Order* in several respects. Motorola believes that each of the issues discussed by TIA raises a fundamental question regarding the technical limitations of wireless systems in use today. Accordingly, the rules should be clarified and modified to require compliance with the goals of this proceeding,

²First Report and Order at ¶1.

but only to the extent possible given existing implementation and protocol constraints. Each of these points is discussed briefly below.

1. The Definition of Code Identification and Treatment of Code and Non-Code Identified Calls Should Be Modified To Recognize the Technical Constraints Inherent in Some Land Mobile Systems

As observed by TIA and others, while many systems can comply with the requirement to process all code identified calls and to selectively process all non-code identified calls, some systems simply cannot provide all of the information required under the *First Report and Order*. Accordingly, TIA and others argued that the Commission should: (i) modify the definition of "code identification"; (ii) clarify that certain database lookups to obtain information required under the order are not prohibited "validation" practices; and (iii) clarify the extent of carriers' obligations in cases where a system is not technically capable of complying with the processing rules.³

The treatment of code and non-code identified calls in the *First Report and Order* would be workable if each cellular Mobile Identification Number ("MIN") was, as NENA

³See Petition for Reconsideration of TIA at 3-5 & 7-12; Petition for Reconsideration of BellSouth Corporation at 8-9; Petition for Reconsideration of CTIA at 3-13 Petition for Reconsideration of Nextel at 3-6; Petition for Reconsideration of Nokia Telecommunications, Inc. at 1-3; Petition for Reconsideration of Omnipoint Corporation at 2-3; Petition for Reconsideration of PCIA at 4-10; Petition for Reconsideration of Southwestern Bell Mobile System at 3-11; Petition for Reconsideration of XYPoint Corp. at 3-6; *see also* Petition for Reconsideration of Ameritech at 7-10; Petition for Reconsideration of Bell Atlantic NYNEX Mobile; Petition for Reconsideration of PRIMECO Personal Communications at 2-6 (all opposing transmission of non-code calls on legal and policy grounds).

postulates the Commission believed,⁴ a valid telephone line number. If that were the case, the process of a mobile transmitting its code identification would give wireless carriers all of the information they require to comply with the E911 rules, and the code/non-code identification differentiation in the rules would be reasonable. However, while the MIN is a valid line number in *many* cases, it is not true in *all* cases. Because there is no one-to-one correspondence between the code identifier and a line number, some form of database lookup (*i.e.*, a validation procedure) is thus *always* required to obtain a line number for a mobile unit. There is thus no reason to differentiate between the MIN for cellular units, the IMSI for GSM-based systems like PCS1900, or any other mobile identifiers.

While it does not make sense to differentiate between code/non-code identified calls, there are basic differences in the capabilities of different wireless systems that *should* be recognized under the rules. As TIA observes, some mobiles, although they transmit a code identification, cannot be addressed (*i.e.*, called) unless the unit has a Subscriber Identity Module ("SIM") installed. Other mobile units may not possess a telephone line number, for example, if they have never been initialized or if they are offered as part of an "originate only" offering. Even for systems like cellular, the MIN for a caller cannot be associated reliably with a line number unless the mobile has registered with the system either as a subscriber or as a roamer. Given these fundamental constraints, Motorola believes the Commission should

⁴Opposition of NENA, APCO and NASNA (Oct. 8, 1996) at 2 n.1 (stating "the FCC considered the code a unique ID for each subscribed handset usually constructed as a dialable telephone number. A 'non-code' phone, unsubscribed or lapsed, might still be able to access 9-1-1 even if not identifiable to any carrier network").

clarify the Phase I obligations of carriers when they cannot provide call-back numbers at all, as well as their obligations when they cannot provide reliable call-back numbers.

2. The Commission Should Modify the "pANI" Definition To Be Implementation Independent

TIA and others have also observed that the specific pANI implementation called for in the *First Report and Order*, while appropriate and workable in some circumstances, may not be compatible with other system implementations.⁵ Thus, instead of defining a particular implementation in the rules, TIA urged the Commission to permit the use of agreements, as necessary, between PSAPs and originating systems to transmit E911 information. In this manner, problems relating to subscriber identification in different environments could be addressed on an individual basis. Motorola believes that allowing resolution of information transmission formats directly between affected parties would better accommodate the needs of PSAPs while ensuring desirable implementation neutrality.

3. The Commission Should Modify the Deadline for TTY Compatibility and Permit the Use of Functional Equivalents To Meet the Needs of Individuals with Speech and Hearing Disabilities

Petitioners have also urged the Commission to reconsider the deadline specified for TTY compatibility and to permit the use of functional equivalents to achieve compliance with

⁵BellSouth Petition at 4-7; CTIA Petition at 14-15; PCIA Petition at 4-7; TIA Petition at 5-7.

the TTY regulations.⁶ Specifically, TIA noted that there are basic incompatibilities with the use of vocoder technology and the signaling tones used for IA2 TTY service. Because modification of digital phones to achieve compatibility with acoustically coupled TTY devices, which would require replacement of existing vocoder technology, is not "readily achievable," TIA suggested a functionally equivalent alternative that appears to meet the needs of individuals with hearing and speech disabilities and could be implemented faster and more efficiently.

Specifically, TIA suggested that it may be possible to develop standards for non-acoustic coupling of TTYs to digital phones that would bypass the vocoder and utilize the short message service ("SMS") or data transmission capabilities of digital systems, in conjunction with a serial data to TTY translator, to allow end-to-end communications between TTYs. Indeed, Motorola understands that many newer TTY units, in fact, already incorporate RS232 digital data ports that could be used to interface with mobile telephones more effectively and reliably than older acoustic couplers. Requiring extensive changes to existing mobile radio systems to achieve compatibility with older, acoustically coupled TTYs is therefore counterproductive, as these devices will gradually be phased out.⁷

Under the circumstances, Motorola agrees with TIA that, until standards are developed and basic technical questions addressed, a one year time limit for compatibility is simply

⁶Omnipoint Petition at 9-14; TIA Petition at 12-15.

⁷In this regard, Motorola also notes that the acoustic coupling mechanisms on older TTY devices are geometrically incompatible with many telephones, including landline telephones, in production today. In the land mobile context, this consideration is exacerbated by the need to manufacture very small, portable units that consumers find acceptable.

premature. Even if the industry can agree on appropriate standards within one year, the Commission's time limits do not provide sufficient flexibility for carriers to implement those standards and "beta" test new systems. Motorola accordingly urges the Commission to defer enacting mobile telephone/TTY compatibility deadlines until after a reasonable implementation framework can be ascertained.

4. The Commission Should Adopt TIA's Recommendation To Allow Industry To Define Appropriate Metrics for Determining ALI Accuracy

Both TIA and Motorola generally agree with the five year automatic location information ("ALI") implementation requirement, and even the goal of achieving accuracy of 125 meters. Like TIA, however, Motorola believes it would be more appropriate to set rules for determining ALI system performance after some additional experience has been gained. Motorola thus urges the Commission to modify the ALI rule by stating the accuracy requirement as "within a 125 meter radius using measurement and compliance procedures as determined by industry standards groups."

Motorola notes that the clear majority of petitioners and commenters on reconsideration discussing ALI requirements have, in fact, taken much stronger positions than TIA on the ability of carriers to comply with the *First Report and Order* regulations. BellSouth, for example, indicated that it attempted to procure an ALI system meeting the Commission's requirements, but no manufacturer submitted any proposal.⁸ Omnipoint and Nokia, both manufacturers, have requested, respectively, acceptance of "best efforts" and delay of the

⁸BellSouth Petition at 10-12.

requirement until more information has been obtained.⁹ PCIA, for its part, argues that the schedule for compliance is not technically feasible.¹⁰

Motorola has been, and continues to be, actively engaged in research efforts to offer the most accurate and reliable ALI technology to its customers. As TIA observed, ALI technology is not simply a public safety product; ALI enhancements have been demanded by carriers for a number of years to allow them to offer a wide range of value-added services. Thus, research into ALI technologies is, and has been, a priority for manufacturers.

Consistent with common sense, Motorola's research has revealed that the accuracy of terrestrial ALI systems is heavily dependent upon a variety of factors, including the multipath environment around the mobile unit, the distances between the mobile and the receiver, and the geometry of the receiver stations. Thus, the ability of a system to achieve 67 percent reliability within a particular area does not mean that a different facilities-based carrier in the same area could achieve the same results or that the same carrier would achieve the same results in a different area. Indeed, even if a carrier complied with the Commission's regulations, significant changes in traffic patterns, like the installation of a new highway, or new buildings that affect line-of-sight to receiver stations from high population areas could render a carrier's system non-compliant.

Instead, Motorola concurs with TIA that some empirical means for determining ALI accuracy for purposes of the FCC's rules should be developed that isolates the effects of

⁹Omnipoint Petition at 15-19; Nokia Petition at 3-4.

¹⁰PCIA Petition at 12-13.

environmental factors. An environmentally-independent accuracy metric would also create a more reasonable compliance task for carriers. Under the existing regulatory structure, a carrier has no assurance, other than the representations of a vendor, that an ALI system will meet the Commission's requirements until *after* it is installed and performance data collected. Indeed, as Motorola has observed, even though initially compliant, a system may be rendered non-compliant due to environmental changes. This lack of any certainty regarding compliance is especially troubling where, as here, there are no assurances that an installed, but non-compliant, system could be modified after the fact to meet the Commission's requirements.


Conclusion


In conclusion, Motorola fully supports regulations mandating E911 compatibility to the extent technically feasible. In several respects, as TIA and others have documented, the rules adopted in the *First Report and Order* fail to recognize basic technical issues that directly impact carriers' ability to comply with the regulations. Accordingly, Motorola urges the Commission to: (i) reform the regulations on code identification and treatment of E911 calls as recommended by TIA; (ii) alter the definition of pANI to adopt a more implementation-neutral approach; (iii) allow the use of functional equivalents to achieve TTY compatibility and defer the TTY compatibility requirements until a reasonable compliance framework can be

determined; and, (iv) allow industry standards groups to develop a means for measuring ALI system accuracy independent of environmental factors.

Respectfully submitted,

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